Chapter 7 - Data Reporting

This chapter defines the tools used to load data into the SWQMIS database. TCEQ's FOD staff enter their field measurements into SWQMIS via data entry screens. The SWQM program's lab samples analyzed by the TCEQ's Houston Laboratory are loaded into the database by DM&A data managers using the SWQMIS loader. For detailed instructions on entering data into the SWQMIS database, TCEQ staff should refer to the SWQMIS Users' Guide available at http://www.tceq.state.tx.us/assets/public/compliance/monops/water/wqm/swqmis_users_guide.pdf. Organizations reporting data to the TCEQ submit data using ASCII pipe delimited file formats to the appropriate Project Manager for loading by DM&A staff into SWQMIS.

TCEQ Region and Central Office Staff

The TCEQ staff authorized to enter sample data into the database use the data entry screens in the Sampling Module of the SWQMIS database. The creation of Sample Events and Sample Sets along with field parameter data are required to be reported electronically to the DM&A Data Manager via SWQMIS within 45 days of the sampling event. When data is entered and published by TCEQ staff, SWQMIS assigns the data the status of pre-production data management (PREDM). Chapter 8 of the SWQMIS User's Guide provides guidance for entry of sample data into SWQMIS by TCEQ staff.

Laboratory Information Management System (LIMS)

Laboratory analyses requested by TCEQ Regional Office staff on Request for Analysis (RFA) forms are performed by the TCEQ Houston Laboratory. These data are then reported by the laboratory to DM&A, and are loaded into the database. Upon loading the data are at the Pre-production data management status in SWQMIS. DM&A staff review the lab report and the electronic data for completeness, appropriateness, and supporting data (including codes, depth, date, time, tag number, and station ID), before publishing the data as production (PROD) data in the SWQMIS database.

TCEQ Partners and Contractors

Data Loader

Two ASCII (DOS) pipe delimited text files must be provided to the TCEQ Project Manager for inclusion in SWQMIS. These two files must follow the format described below (example provided at the end of this chapter). These files are related to each other through the Tag ID, which is described in Chapter 6. There is a one-to-many relationship between the Sample/Event file and the Results file with multiple measurements in the Results file for each Event (monitoring/sampling event). For purposes of the upload files, an event record is defined as a unique sampling regime conducted at a specific date, place (station ID and depth), and time. This is different from a SWQMIS Sample Event. For example, a Sample Event might consist of collecting a metals in sediment sample at station 12049 on 5 February 2002, 13:00 hrs. Water, tissue, sediment, and distinct types of biological (nekton, habitat, benthic) samples are all considered separate event records, even when collected at the same time and location (i.e., during the same Sample Event). Each event record must have a unique Tag ID. Instantaneous field measurements (grabs) collected immediately before or after a 24-hour Sample Event

(composite) are also considered separate event records and the submitting entity may not be report it under the same Tag ID as the 24-hour data. Fields marked as Data Value Required = "Y" must be completed prior to data submission.

Sample/Events File Structure

Each record in the Sample/Events File consists of the fourteen fields described below; fields may or may not contain data. Fields must be in the order listed in the table below. For a grab sample, if a field is only appropriate for composite Sample Event (noted with a "C" in the Data Value Required column), the field should still be present in the Events file, but left blank. The fields marked with a "Y" in the Data Value Required column must contain either a text or numeric value for every sample collected. Except for the 'Comment' field, these fields must contain only numeric or alpha characters, as designated in field descriptions. No punctuation (such as quotation marks, commas, periods, etc.) can be accepted.

Field Name	Data Field Required	Length	Data Value Required	Description
Tag ID	Y	7[1]	Y	Key field that is common to both the Events and Results file. Each Tag_ID is unique in the Events file. The first 1- or 2-digits must match the Tag Prefix assigned to the submitting agency.
Station ID	Y	5	Y	A unique 5 digit code that identifies each sampling station. This number is generated by the database in response to the submission of a SLOC Request to DM&A. Data collected at new stations cannot be loaded into SWQMIS until the station ID has been assigned.
End date	Y	10	Y	Date the sample was collected. Reported as MM/DD/YYYY. Leading zeros are required for month and day. For composite samples this is the last date a sample or measurement was collected.
End time	Y	5	Y	The time the sample was collected. Reported in military (24-hour) format. For composite samples, this is the time the last sample was collected. Leading zeros are required where applicable (for example, 09:30).
End depth	Y	6	Y	The depth in meters at which the sample was collected. For composite samples, the deepest depth at which the sample was collected.

Start date	Y	10	C	This field requires a value for composite samples only and is the sample collection start date. If this field is not blank, then Start time, Start depth, Category, and Type must also contain a data value. If a sample is not a composite, this field should be blank. Reported as MM/DD/YYYY.
Start time	Y	5	C	This field requires a value for composite samples only and is the sample collection start time. If this field is not blank, then Start date, Start depth, Category, and Type must also contain a data value. If a sample is not a composite, this field should be blank. Leading zeros are required where applicable (for example, 09:30).
Start depth	Y	6	C	This field requires a value for composite samples only and is the depth nearest the surface for sample collection (in meters). If this field is not blank, Start time, Category, and Type must also contain a data value. If a sample is not a composite, this field should be blank.
Category	Y	1	C	This field requires a value for composite samples only and should correspond to the following codes: T=time, S=space, B=both, and F=flow weight. If this field is not blank, then Start date, Start time, Start Depth, and Type must also contain a data value. If a sample is not a composite, this field should be blank.
Type	Y	2	C	This field requires a value for composite samples only and should correspond to the following codes: ## = number of grabs in composite, CN = continuous, GB = number of grabs is unknown. If the data value is a single digit, a leading zero is required (for example, 3 =”03"). If a sample is not a composite, this field should be left blank.
Comment	Y	135	N	This is the text field for any observational data available for the event. If there is no observational data, this field should be left blank.

Submitting Entity	Y	2	Y	The code that indicates the entity responsible for submitting data to the TCEQ, usually the QAPP holder. Valid codes are assigned by the TCEQ, and presented in Chapter 4. (Formerly known as Source Code 1).
Collecting Entity	Y	2	Y	The code that indicates the entity actually collecting samples in the field. Valid codes are assigned by the TCEQ. This document lists these codes in Chapter 4. (Formerly known as Source Code 2).
Monitoring Type	Y	2	Y	The code used to identify the type of sampling that is being reported in the dataset for a unique tag. TCEQ assigns valid codes, and they are listed in Chapter 4. (Formerly known as Program Code).

[1] Tag ID can accept up to nine characters. However, seven characters is the norm.

The generic structure of the Sample/Events file:

Tag|Station Id|End Date|End Time|End Depth|Start Date|Start Time|Start Depth|Category|Type|Comment|Submitting Entity|Collecting Entity|Monitoring Type

Examples of Sample/Event file:

Grab:

0012345|16789|10/11/2003|12:00|0.3|||||Water green|LC|LC|RT

Composite:

0012345|16789|10/11/2004|12:00|0.6|10/11/2002|12:00|0.3|S||Sunny and warm|LC|LC|RT

Profile:

L150001|15301|01/01/2004|14:15|0.3|||||||LC|LC|RT

L150002|15301|01/01/2004|14:15|6.10|||||||LC|LC|RT

L150003|15301|01/01/2004|14:15|9.15|||||||LC|LC|RT

24 Hour:

R150001|15301|01/02/2004|14:15|0.3|01/01/1999|14:00|0.3|T|24||LC|LC|CS

Tissue:

0012345|13270|12/12/2003|11:15|2|12/12/2003|14:15|0.3|B|04|Coots feeding|LC|LC|RT

Results File Structure

The Results file may have one or multiple records for each event record. Each record consists of the nine fields described below; fields may or may not contain data. Fields must be in the order listed in the table below. If a field value is not appropriate for all result records, the blank field must still be present in the Results file. These fields must contain only numeric or alpha characters, as designated in field descriptions. No punctuation (such as quotation marks,

commas, periods, etc.) can be accepted.

Field Name	Data Field Required	Length	Data Value Required	Description
Tag ID	Y	7[1]	Y	Unique code connecting the water quality sample results to a Tag ID in the Events file. The same code is assigned to all results that came from the same water quality sample. Therefore, there will be many results with the same Tag ID, which all match a single record in the Events file.
End date	Y	10	Y	The date the sample was collected. Reported as MM/DD/YYYY. This date needs to match the End date in the Events file for the specified Tag ID. Leading zeros are required for month and day.
Parameter Code	Y	5	Y	The 5 digit parameter code that identifies the substance being measured. Leading zeros are required where applicable (for example, 00400).
GT/LT	Y	1	N	If the value determined is a "<" value, report "<" in this field. If the value determined is a ">" value, then report a ">" in this field. Otherwise, leave blank.
Value	Y	8	Y	This is the level or test result of the substance being measured and is reported in the units defined in the parameter code description found in SWQMIS.
LOD	Y	8	N	This is the Limit of Detection for this parameter.
LOQ	Y	8	N	This is the Limit of Quantitation for this parameter.
Qualifier Code	Y	2	N	Formerly referred to as Remark Code. See Chapter 10 for a list of codes and their definitions.
Verify Flag	Y	1	N	If Value is outside the minimum/maximum range defined in SWQMIS (Chapter 2), the data submitter must place a “1" in this field to indicate that s/he has verified the data value. If the value cannot be verified, the submitting entity must add a qualifier code (Chapter 10) in the Qualifier Code field.

[1] Tag ID can accept up to nine characters. However, seven characters is the norm.

The generic structure of the Results file:

Tag|End Date|Parameter|GT/LT|Value|LOD|LOQ|Qualifier Code|Verify Flag

Examples of Results file:

Grab**:**

0012345|10/11/2002|00061|<|1||||

0012345|10/11/2002|00940||53|||BL|

Composite:

0012345|10/11/2002|00221||24||||

0012345|10/11/2002|00209||18||||

0012345|10/11/2002|00210||22||||

0012345|10/11/2002|00211||14|||PE|1

Profile**:**

L150001|01/01/1999|00010||18.3||||

L150002|01/01/1999|00010||17.6|||J|1

24 Hour**:**

R150001|01/02/1999|00216||7.9||||

R150001|01/02/1999|00220||24||||

R150001|01/02/1999|00218||11.5||||

Tissue**:**

0012345|12/12/2003|74990||016||||

0012345|12/12/2003|74995||59||||

0012345|12/12/2003|81614||1||||

0012345|12/12/2003|81615||1||||

0012345|12/12/2003|00039||92||||1

0012345|12/12/2003|84100||2|||SP|